

CLAIMS

1. Use of the promintron sequence of the *rolA* gene from *Agrobacterium rhizogenes* as in SEQ ID NO. 1, or of DNA sequences comprising said promintron sequence, or of functional homologous or portion thereof, to induce the expression of a DNA coding sequence, in recombinant bacteria during exponential, post-exponential and stationary phase of growth, and in bacteroids within root nodules, said coding DNA sequence being under the control of said promintron sequence.
2. Use of the promintron sequence according to claim 1 wherein said recombinant bacteria belong to either the *Enterobacteriaceae* or the *Rhizobiaceae* families.
3. Use of the promintron sequence according to claim 2 wherein said recombinant bacteria belonging to either the *Enterobacteriaceae* or the *Rhizobiaceae* families are *E. coli*, *Rhizobia* or *Agrobacteria*.
4. Use of the promintron sequence according to claim 3 wherein said recombinant bacteria are of the *Rhizobia* genus, either within symbiotic root nodules or in a free living status.
5. Use of the promintron sequence according to claim 4 wherein said recombinant bacteria of the *Rhizobia* genus within symbiotic root nodule, are either bacteroids of stage I, II, III, IV, V, or *Rhizobia* present in the apoplastic space, or *Rhizobia* present in the senescence zone, or *Rhizobia* present in the nitrogen fixing zone, or *Rhizobia* present in the invasion zone.
6. A recombinant DNA molecule comprising the promintron sequence according to claim 1, or functional homologous or portion thereof, and covalently linked to the 3' end of said promintron sequence, a DNA coding sequence, said recombinant DNA molecule being

either harboured by prokaryotic episomal elements, or integrated in a bacterial genome.

- 5 7. The recombinant DNA molecule according to claim 6 wherein said DNA coding sequence is either a monocistronic or a polycistronic transcriptional unit.
- 10 8. The recombinant DNA molecule according to claim 7 wherein said DNA coding sequence encodes a protein involved in plant hormone auxin synthesis and/or metabolism.
- 15 9. The recombinant DNA molecule according to claim 8 wherein said DNA coding sequence encodes a protein involved in the synthesis and/or metabolism of the auxin IAA or of the auxin indolethanol.
- 20 10. The recombinant DNA molecule according to claim 8 wherein said DNA coding sequence encodes the *iaaM* protein from *P. syringae* subsp. *savastanoi* or an homologous thereof.
- 25 11. The recombinant DNA molecule according to claim 8 wherein said DNA coding sequence encodes the *tms2* protein from *A. tumefaciens* or an homologous thereof.
- 30 12. The recombinant DNA molecule according to claim 8 wherein said DNA coding sequence encodes both the *iaaM* and the *tms2* coding regions of claim 10 and 11, respectively.
13. The recombinant DNA molecule according to claim 8 wherein said DNA coding sequence encodes the indolepyruvate decarboxylase from *Enterobacter cloacae* or an homologous thereof.

- Sub A3
14. Genetically engineered bacteria comprising the recombinant DNA molecule according to claims from 6 to 13.
- 5 15. Use of the recombinant DNA molecule according to claims from 6 to 13 to significantly increase the size of nodules of a plant.
16. Use of the recombinant DNA molecule according to claim 15 wherein said statistically significant increase of the nodule size is of at least 20%.
- 10 Sub A3 17. Use of the recombinant DNA molecule according to claims from 6 to 13 to significantly increase the capacity to fix nitrogen of a nodulated plant.
- 15 18. Use of the recombinant DNA molecule according to claim 17 wherein said statistically significant increase of the capacity to fix nitrogen is of at least 20%.
- Sub A4 19. Use of the recombinant DNA molecule according to claims from 6 to 13 to significantly increase the plant biomass production.
- 20 20. Use of the recombinant DNA molecule according to claim 19 wherein said statistically significant increase of the plant biomass production is of at least 10%.
- Sub A5 21. Legume plant infected by bacteria harbouring the recombinant DNA molecule according to claims from 6 to 13 and having a significant increase of the size of nodules, and/or of the nodule capacity to fix nitrogen, and/or of the plant biomass, and/or of the ability to fix nitrogen.
- 25

Add B2

00457.0004
00457.0004